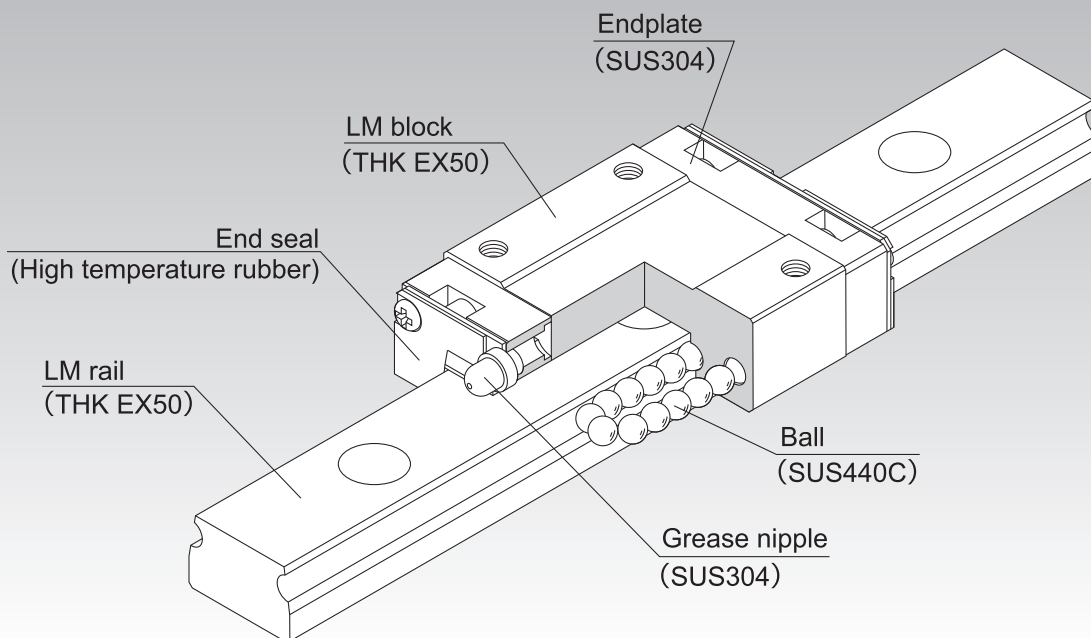


# RSR-M1

## LM Guide High Temperature Type Model RSR-M1



**Point of Selection** **A1-10**

**Point of Design** **A1-460**

**Options** **A1-485**

**Model No.** **A1-551**

**Precautions on Use** **A1-557**

**Accessories for Lubrication** **A24-1**

**Mounting Procedure and Maintenance** **B1-89**

Equivalent Moment Factor **A1-43**

Rated Loads in All Directions **A1-60**

Equivalent Factor in Each Direction **A1-62**

Radial Clearance **A1-73**

Accuracy Standards **A1-84**

Shoulder Height of the Mounting Base and the Corner Radius **A1-475**

Reference Error Tolerance for the Mounting Surface **A1-477**

Flatness of the Mounting Surface **A1-478**

Dimensions of Each Model with Options Attached **A1-499**

**A1-390** **THK**

## Structure and Features

Balls roll in two rows of raceways precision-ground on an LM rail and an LM block, and endplates incorporated in the LM block allow the balls to circulate.

High temperature type miniature LM Guide model RSR-M1 is capable of being used at service temperature up to 150°C thanks to THK's unique technologies in material, heat treatment and lubrication.

### [Maximum Service Temperature: 150°C]

Use of stainless steel in the endplates and high temperature rubber in the end seals achieves the maximum service temperature of 150°C.

### [Dimensional Stability]

Since it is dimensionally stabilized, it demonstrates superb dimensional stability after being heated or cooled (note that it shows linear expansion at high temperature).

### [Highly Corrosion Resistant]

Since the LM block, LM rail and balls use stainless steel, which is highly corrosion resistant, this model is optimal for clean room applications.

### [High Temperature Grease]

This model uses high temperature grease that shows little grease-based fluctuation in rolling resistance even if temperature changes from low to high levels.

## Thermal Characteristics of LM Rail and LM Block Materials

- Specific heat capacity: 0.481 J/(g•K)
- Thermal conductivity: 20.67 W/(m•K)
- Average coefficient of linear expansion:  $11.8 \times 10^{-6}/^{\circ}\text{C}$

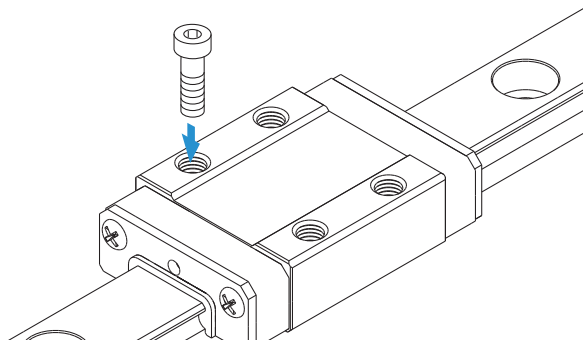
**THK** **A1-391**

## Types and Features

### Models RSR-M1K, M1V

This model is a standard type.

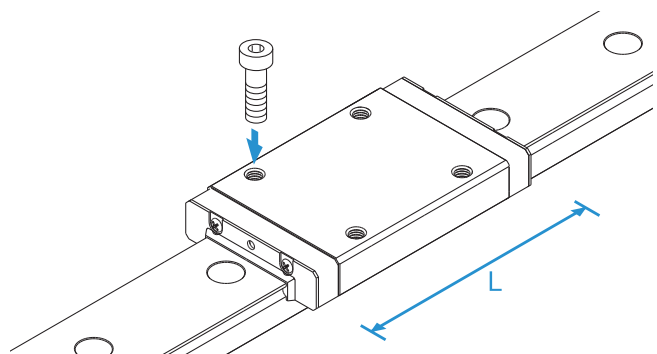
Specification Table⇒ **A1-394**



### Model RSR-M1N

It has a longer overall LM block length (L) and a greater rated load than standard types.

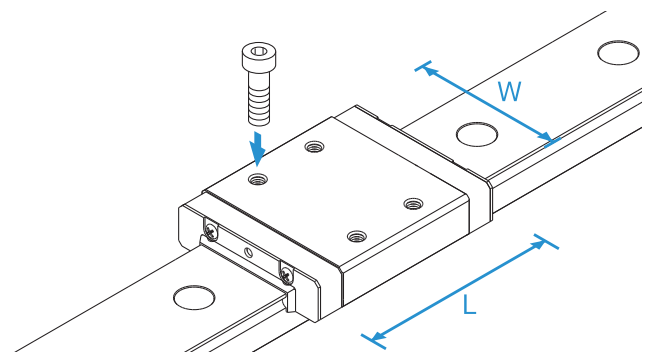
Specification Table⇒ **A1-394**



### Model RSR-M1WV

These models have greater overall LM block lengths (L), broader widths (W) and greater rated loads and permissible moments than standard types.

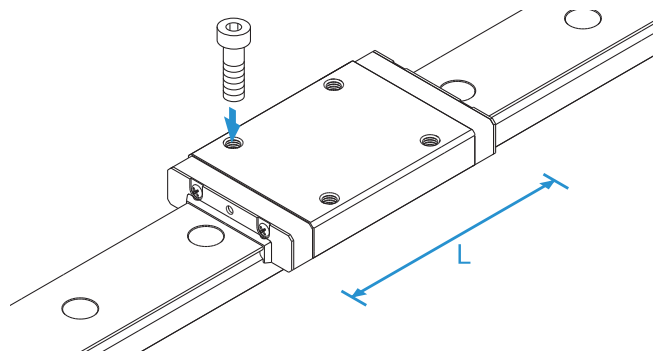
Specification Table⇒ **A1-396**



### Model RSR-M1WN

It has a longer overall LM block length (L), a greater rated load than standard types. Achieves the greatest load capacity among the high temperature type miniature LM Guide models.

Specification Table⇒ **A1-396**



**A1-392 THK**

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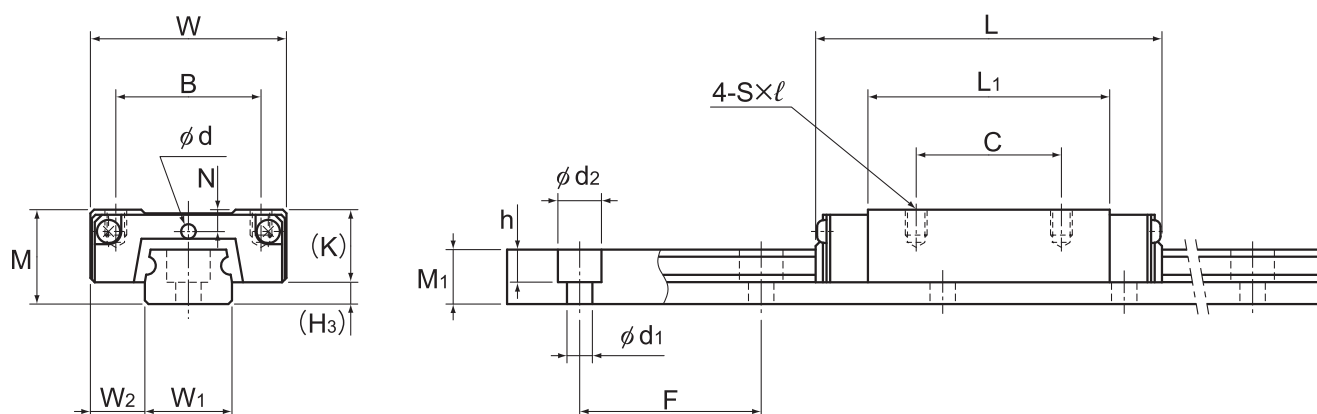
## Service Life

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When using this product in temperatures higher than 100°C, always multiply the basic dynamic load rating by the temperature coefficient when calculating the rated service life. See **A1-66** for details.

**THK** **A1-393**

## Models RSR-M1K, RSR-M1V and RSR-M1N



Models RSR9M1K/9M1N and RSR12M1V/M1N

Model No.	Outer dimensions			LM block dimensions										H <sub>3</sub>
	Height	Width	Length	B	C	S×l	L <sub>1</sub>	T	K	N	E	Greasing hole d	Grease nipple	
	M	W	L											
RSR 9M1K RSR 9M1N	10	20	30.8 41	15	10 16	M3×3	19.8 29.8	—	7.8	—	—	—	—	2.2
RSR 12M1V RSR 12M1N	13	27	35 47.7	20	15 20	M3×3.5	20.6 33.3	—	10	3	—	2	—	3
RSR 15M1V RSR 15M1N	16	32	43 61	25	20 25	M3×4	25.7 43.5	—	12	3.5	3.6 3.7	—	PB107	4
RSR 20M1V RSR 20M1N	25	46	66.5 86.3	38	38	M4×6	45.2 65	5.7	17.5	5	6.4	—	A-M6F	7.5

### Model number coding

<b>2</b>	<b>RSR15</b>	<b>M1</b>	<b>V</b>	<b>UU</b>	<b>C1</b>	<b>+230L</b>	<b>P</b>	<b>T</b>	<b>-II</b>
No. of LM blocks used on the same rail (*1)	Model number	Type of LM block	Symbol for high temperature type LM Guide	Contamination protection accessory symbol (*2)	Radial clearance symbol (*3) Normal (No symbol) Light preload (C1)	LM rail length (in mm)	Symbol for LM rail jointed use	Accuracy symbol (*4) Normal grade (No Symbol)/High accuracy grade (H) Precision grade (P)	Symbol for No. of rails used on the same plane (*5)

(\*1) No symbol for 1 LM block. (\*2) See contamination protection accessories on **A1-524**.

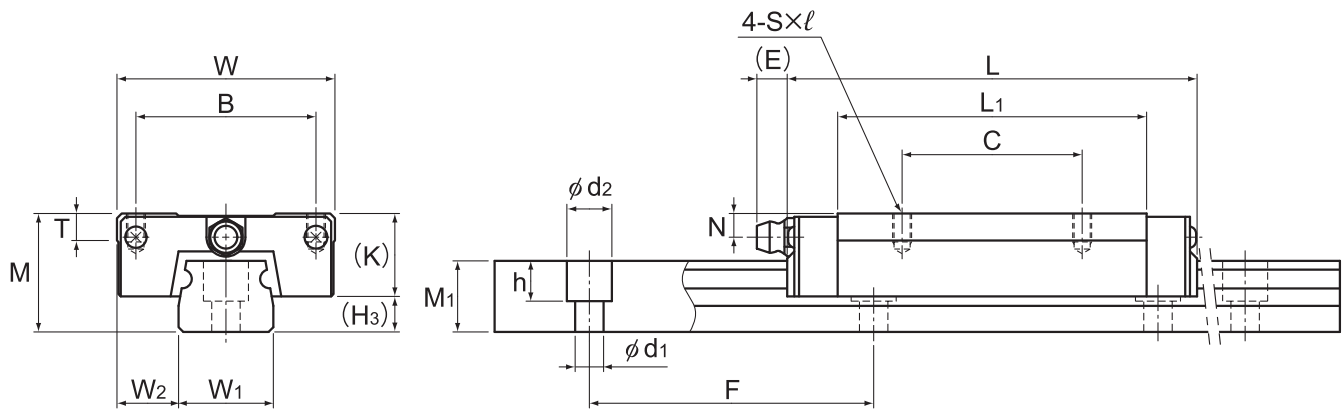
(\*3) See **A1-73**. (\*4) See **A1-84**. (\*5) See **A1-13**.

Note) This model number indicates that a single-rail unit constitutes one set. (i.e., required number of sets when 2 rails are used in parallel is 2 at a minimum.)

**A1-394** **THK**

Download data by searching for the corresponding model number on the Technical Support site.

<https://tech.thk.com>



Models RSR15 and 20M1V/M1N

Unit: mm

	LM rail dimensions						Basic load rating		Static permissible moment N·m*					Mass	
	Width		Height	Pitch		Length*	C	C <sub>0</sub>	$M_A$		$M_B$		$M_C$	LM block	LM rail
	W <sub>1</sub>	W <sub>2</sub>	M <sub>1</sub>	F	d <sub>1</sub> × d <sub>2</sub> × h	Max	kN	kN	1 block	Double blocks	1 block	Double blocks	1 block	kg	kg/m
9	$\begin{matrix} 0 \\ -0.02 \end{matrix}$	5.5	5.5	20	3.5 × 6 × 3.3	1240	$\begin{matrix} 1.47 \\ 2.6 \end{matrix}$	$\begin{matrix} 2.25 \\ 3.96 \end{matrix}$	$\begin{matrix} 7.34 \\ 18.4 \end{matrix}$	$\begin{matrix} 43.3 \\ 97 \end{matrix}$	$\begin{matrix} 7.34 \\ 18.4 \end{matrix}$	$\begin{matrix} 43.3 \\ 97 \end{matrix}$	$\begin{matrix} 10.4 \\ 18.4 \end{matrix}$	$\begin{matrix} 0.018 \\ 0.027 \end{matrix}$	0.32
12	$\begin{matrix} 0 \\ -0.025 \end{matrix}$	7.5	7.5	25	3.5 × 6 × 4.5	1430	$\begin{matrix} 2.65 \\ 4.3 \end{matrix}$	$\begin{matrix} 4.02 \\ 6.65 \end{matrix}$	$\begin{matrix} 11.4 \\ 28.9 \end{matrix}$	$\begin{matrix} 74.9 \\ 163 \end{matrix}$	$\begin{matrix} 10.1 \\ 25.5 \end{matrix}$	$\begin{matrix} 67.7 \\ 145 \end{matrix}$	$\begin{matrix} 19.2 \\ 31.8 \end{matrix}$	$\begin{matrix} 0.037 \\ 0.055 \end{matrix}$	0.58
15	$\begin{matrix} 0 \\ -0.025 \end{matrix}$	8.5	9.5	40	3.5 × 6 × 4.5	1600	$\begin{matrix} 4.41 \\ 7.16 \end{matrix}$	$\begin{matrix} 6.57 \\ 10.7 \end{matrix}$	$\begin{matrix} 23.7 \\ 63.1 \end{matrix}$	$\begin{matrix} 149 \\ 330 \end{matrix}$	$\begin{matrix} 21.1 \\ 55.6 \end{matrix}$	$\begin{matrix} 135 \\ 293 \end{matrix}$	$\begin{matrix} 38.8 \\ 63 \end{matrix}$	$\begin{matrix} 0.069 \\ 0.093 \end{matrix}$	0.925
20	$\begin{matrix} 0 \\ -0.03 \end{matrix}$	13	15	60	6 × 9.5 × 8.5	1800	$\begin{matrix} 8.82 \\ 14.2 \end{matrix}$	$\begin{matrix} 12.7 \\ 20.6 \end{matrix}$	$\begin{matrix} 75.4 \\ 171 \end{matrix}$	$\begin{matrix} 435 \\ 897 \end{matrix}$	$\begin{matrix} 66.7 \\ 151 \end{matrix}$	$\begin{matrix} 389 \\ 795 \end{matrix}$	$\begin{matrix} 96.6 \\ 157 \end{matrix}$	$\begin{matrix} 0.245 \\ 0.337 \end{matrix}$	1.95

Note1) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-398**.)

Static permissible moment\* 1 block: the static permissible moment with one LM block

Double blocks: static permissible moment when two LM blocks are in close contact with each other

Total block length L

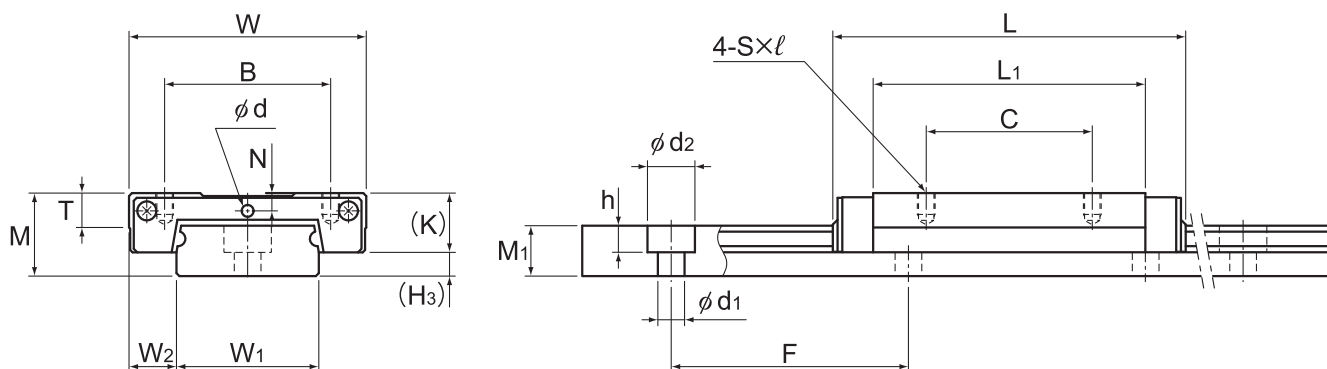
: The total block length L shown in the table is the length with the dust-proof parts (code: UU).

Please be aware that balls will fall out if the LM block is removed from the LM rail.

Note2) The basic load rating in the dimension table is for a load in the radial direction. Use Table7 on **A1-60** to calculate the load rating for loads in the reverse radial direction or lateral direction.

Options ⇒ **A1-485****THK A1-395**

## Models RSR-M1WV and RSR-M1WN



Models RSR9 and 12M1WV/M1WN

Model No.	Outer dimensions			LM block dimensions										H <sub>3</sub>
	Height	Width	Length	B	C	S × l	L <sub>1</sub>	T	K	N	E	Greasing hole d	Grease nipple	
	M	W	L	B	C	S × l	L <sub>1</sub>	T	K	N	E	d		H <sub>3</sub>
RSR 9M1WV RSR 9M1WN	12	30	39 50.7	21 23	12 24	M2.6 × 3 M3 × 3	27 38.7	—	7.8	2	—	1.6	—	4.2
RSR 12M1WV RSR 12M1WN	14	40	44.5 59.5	28	15 28	M3 × 3.5	30.9 45.9	4.5	10	3	—	2	—	4
RSR 15M1WV RSR 15M1WN	16	60	55.5 74.5	45	20 35	M4 × 4.5	38.9 57.9	5.6	12	3.5	3	—	PB107	4

### Model number coding

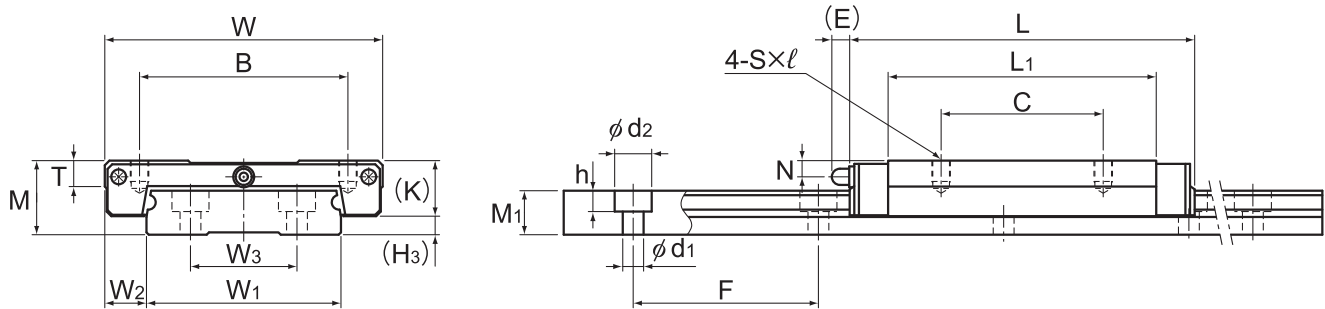
<b>2</b>	<b>RSR12</b>	<b>M1</b>	<b>WN</b>	<b>UU</b>	<b>C1</b>	<b>+310L</b>	<b>P</b>	<b>T</b>
No. of LM blocks used on the same rail (*1)	Model number	Symbol for high temperature type LM Guide	Type of LM block	Contamination protection accessory symbol (*2)	Radial clearance symbol (*3) Normal (No symbol) Light preload (C1)	LM rail length (in mm)	Symbol for LM rail jointed use	Accuracy symbol (*4) Normal grade (No Symbol)/High accuracy grade (H) Precision grade (P)

(\*1) No symbol for 1 LM block.  
(\*2) See contamination protection accessories on **A1-524**. (\*3) See **A1-73**. (\*4) See **A1-84**.

**A1-396** **THK**

Download data by searching for the corresponding model number on the Technical Support site.

<https://tech.thk.com>



Models RSR15M1WV/M1WN

Unit: mm

	LM rail dimensions							Basic load rating		Static permissible moment N·m*					Mass	
	Width		Height	Pitch	Length*	C	C <sub>0</sub>	M <sub>A</sub>		M <sub>B</sub>		M <sub>C</sub>	LM block	LM rail		
	W <sub>1</sub>	W <sub>2</sub>						W <sub>3</sub>	M <sub>1</sub>	F	d <sub>1</sub> × d <sub>2</sub> × h	Max			kN	kN
	18 <sup>0</sup> <sub>-0.05</sub>	6	—	7.5	30	3.5 × 6 × 4.5	1430	2.45	3.92	16	92.9	16	92.9	36	0.035	1.08
	24 <sup>0</sup> <sub>-0.05</sub>	8	—	8.5	40	4.5 × 8 × 4.5	1600	4.02	6.08	24.5	138	21.7	123	59.5	0.075	1.5
	42 <sup>0</sup> <sub>-0.05</sub>	9	23	9.5	40	4.5 × 8 × 4.5	1800	6.66	9.8	50.3	278	44.4	248	168	0.17	3
								3.52	5.37	31	161	31	161	49.4	0.051	
								5.96	9.21	53.9	274	47.3	242	90.1	0.101	
								9.91	14.9	110	555	97.3	490	255	0.21	

Note1) The maximum length under "Length\*" indicates the standard maximum length of an LM rail. (See **A1-398**.)

Static permissible moment\* 1 block: the static permissible moment with one LM block

Double blocks: static permissible moment when two LM blocks are in close contact with each other

Total block length L

: The total block length L shown in the table is the length with the dust-proof parts (code: UU).

Please be aware that balls will fall out if the LM block is removed from the LM rail.

Note2) The basic load rating in the dimension table is for a load in the radial direction. Use Table7 on **A1-60** to calculate the load rating for loads in the reverse radial direction or lateral direction.

Options ⇒ **A1-485****THK A1-397**



## Standard Length and Maximum Length of the LM Rail

Table1 shows the standard and maximum lengths of the RSR M1 model rail.

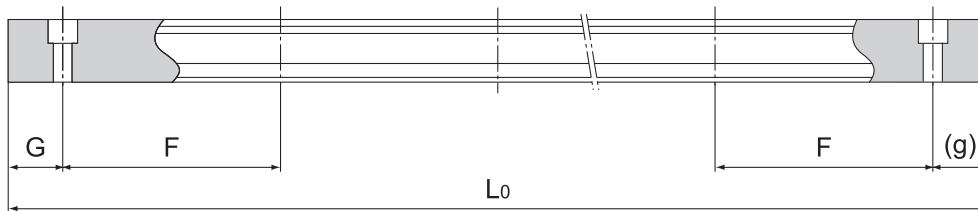


Table1 Standard Length and Maximum Length of the LM Rail for Model RSR-M1

Unit: mm

Model No.	RSR 9M1	RSR 9M1W	RSR 12M1	RSR 12M1W	RSR 15M1	RSR 15M1W	RSR 20M1
LM rail standard length ( $L_0$ )	55	50	70	70	70	110	220
	75	80	95	110	110	150	280
	95	110	120	150	150	190	340
	115	140	145	190	190	230	460
	135	170	170	230	230	270	640
	155	200	195	270	270	310	880
	175	260	220	310	310	430	1000
	195	290	245	390	350	550	
	275	320	270	470	390	670	
	375		320	550	430	790	
			370		470		
			470		550		
			570		670		
					870		
Standard pitch F	20	30	25	40	40	40	60
G,g	7.5	10	10	15	15	15	20
Max length	1240	1430	1430	1600	1600	1800	1800

Note) The maximum length varies with accuracy grades. Contact THK for details.

## Prevention of LM block from falling off of LM rail

In models RSR-M1/RSR-M1W, the balls fall out if the LM block comes off the LM rail.

For this reason, LM Guide assemblies are delivered with a part which prevents the LM block from coming off the rail. If you remove this part when using the product, please take precautions to avoid overrunning the blocks off of the rail.

**A1-398 THK**

**THK A1-399**